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BITCOIN HALVING

(Syllabus: GS Paper 3 – Economy)

What is Bitcoin halving and what does it mean for the crypto community?

Does the process result in huge carbon footprints and require a vast amount of electricity? What is the significance of this event? Why does it matter to cryptocurrency investors? What direction will the crypto market take after the event?

Sahana Venugopal

Just as the sporting world eagerly awaits the Olympics every four years, those following cryptocurrency look forward to their own quadrennial event. As athletes train for the 2024 Games in Paris this summer, crypto traders and Bitcoin miners are preparing for what is known as the 'Bitcoin halving'–predicted to happen in April.

What is the Bitcoin halving?

Bitcoin halving refers to the 50% reduction in the reward paid to Bitcoin miners who successfully process other people's cryptocurrency transactions so that they can be added to the public digital ledger known as the blockchain. In order to "grow" Bitcoin's blockchain and keep the ecosystem running, Bitcoin miners rely on advanced computer equipment to solve a complex mathematical puzzle through a process known as 'Proof of work.' This intense activity is the reason Bitcoin transactions result in huge carbon footprints and require vast amount of electricity. No real mining is carried out.

The Bitcoin miners with cutting-edge computer equipment, working on an industrial scale, are most likely to solve the puzzle first and claim their prize, which is currently set at 6.25 Bitcoin (BTC). While the reward amount is set, the true value of this prize fluctuates based on BTC prices in the market, and when the owner chooses to sell.

Think of a group of grocery store cashiers who are in a contest to each bill the same set of items, with the person doing it first (and accurately) getting a prize of ten gold coins at the end. The cashiers can use their favourite tools in order to bill the items and process the payment. While one might prefer to tally up the total with paper and pencil, another might decide to use their smartphone calculator, while someone else buys a state-of-the art computer system attached to a price scanner. The person most likely to win in this case is the cashier with the most advanced equipment, but the others stand a chance of winning as well. This is largely a positive system for everyone: the customers' items are efficiently billed and all the cashiers do their job well because they want to claim the prize.

After four or so years, you return to the grocery store where the cashiers still have this contest, but the prize money has been reduced to five gold coins. Is the prize still worth the effort? That depends on the price of gold in the market, and the cost of the equipment that the cashiers bought in order to win the gold coins. This is one way to understand Bitcoin halving.

Why does the Bitcoin halving matter to crypto investors?

Bitcoin mining increases the supply of BTC in circulation while Bitcoin halving reduces the rate at which these coins are released, making the asset more scarce. Scarcity is seen as pushing up prices, as is the case with gold. While there can only ever be 21 million BTC in the world, over 19 million have already been "mined" or released. This sounds like the end of the story, but Bitcoin halving means it will take far more time for the remaining coins to be mined. A halving takes place after 2,10,000 blocks are mined, and has happened so far in 2012, 2016, and 2020 – every four years.

In 2009, a successful Bitcoin miner could claim a prize of 50 BTC. After this year's halving, they will only get 3.125 BTC. However, keep in mind that Bitcoin prices are far higher now than they were in 2009, so this isn't necessarily a loss for the miner. As of February 14, the price of 1 BTC was around $49,528. This means a mining reward on February 14 would be worth around $3,09,550 (6.25 x price of 1 BTC). Whether this value will rise or fall after the Bitcoin halving depends on the price of Bitcoin.

Both corporate and independent Bitcoin miners are spread across the world, trying to leverage cheap electricity prices in countries like Kazakhstan and Iran to mine as much Bitcoin as they can. China was originally home to many of the world's crypto miners, but government crackdowns triggered an exodus to other countries.

What impact will Bitcoin halving have on investors?

This depends on the investor in question, and the extent of their involvement with Bitcoin and its ecosystem. For example, a corporate-level miner who has burned through their wallet paying for Bitcoin mining hardware (and the electricity bills that come from powering them) is probably desperate to earn their block reward in these last days while it is still set at 6.25 BTC rather than the much lower 3.125 BTC.

On the other hand, a new trader who has invested a small sum of money in Bitcoin through their crypto exchange via a phone app and knows nothing about the underlying blockchain technology might not even react to the news of the halving.

Meanwhile, a more experienced trader who has looked at past halvings might try increasing their Bitcoin investment in the hope of benefiting from a possible price spike, even as another might "short" Bitcoin while hoping to profit from a possible price crash.

What will happen to the crypto market after the next Bitcoin halving?

While nobody can know for sure what would happen to the crypto market, innumerable self-styled crypto traders, financial analysts, fintech engineers, crypto influencers, and statisticians claim they can predict the price trajectory of Bitcoin with the help of cryptocurrency models and metrics, but investors should know these are all educated guesses at best.

Many Bitcoin investors and watchers also reference a recurring four-year cycle that hinges on the halvings, or even claim that prices spike after the halvings.

But in reality, the coin's journey has been far more unpredictable and difficult to map out.

Every halving in Bitcoin's history has been wildly different due to an eclectic mix of blockchain-related factors, increasing regulation by lawmakers worldwide, more awareness about cryptocurrency investments, greater adoption of Bitcoin, and diverse geopolitical events or economic shocks. Bitcoin is an asset whose price is largely steered by investors' emotions, with there even being a 'Fear and Greed' indicator to help investors understand how prices could suddenly shift.

While the next Bitcoin halving will be a fascinating episode to witness, it is best for crypto watchers to rely on their own research and decide what the halving means to them personally.

Context: As athletes train for the 2024 Games in Paris this summer, crypto traders and Bitcoin miners are preparing for what is known as the **'Bitcoin Halving '** predicted to happen in April.

Bitcoin Halving

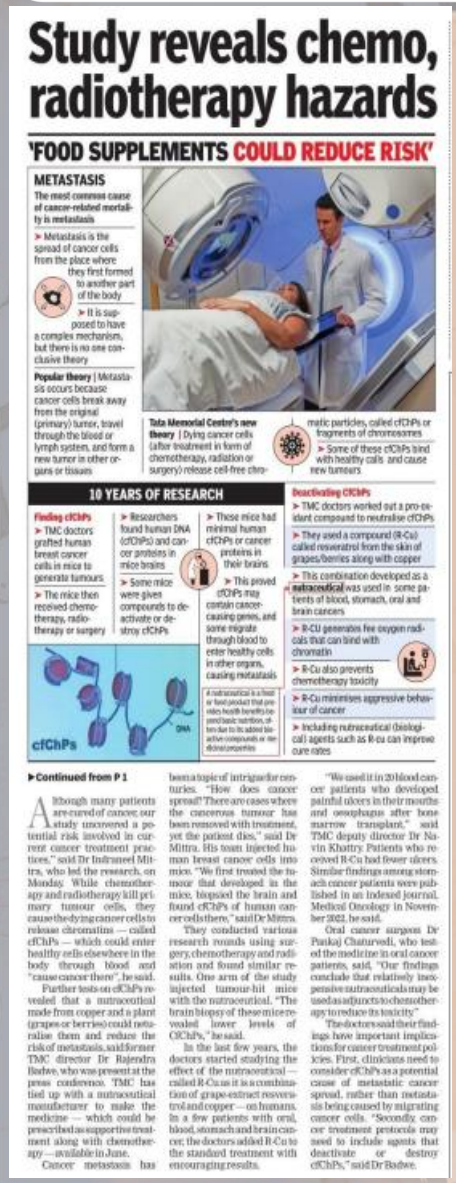
- **Bitcoin**: It is the first decentralized cryptocurrency.
- **Bitcoin halving**: It entails a 50% reduction in the reward granted to Bitcoin miners for processing cryptocurrency transactions and appending them to the blockchain.
- **Proof of Work**: Bitcoin miners employ advanced computer equipment to solve intricate mathematical puzzles via the Proof of Work mechanism, essential for expanding Bitcoin's blockchain and sustaining its ecosystem.
- **Environmental Impact**: Bitcoin mining, despite not involving physical excavation, contributes to significant carbon footprints and energy consumption due to the intensive computational processes required for transaction validation.
- **Mining Competition**: Bitcoin miners, equipped with sophisticated technology and operating on an industrial scale, engage in fierce competition to be the first to solve the mathematical puzzle and claim the current reward of 6.25 Bitcoin (BTC).
- **Reward Fluctuations**: Although the Bitcoin reward remains fixed, its actual value fluctuates according to market BTC prices and the timing of the reward owner's decision to sell, highlighting the dynamic nature of cryptocurrency economics.

Importance of the Bitcoin Halving for Crypto Investors

- **Scarcity**: Bitcoin mining increases the supply of BTC in circulation while the Bitcoin Halving reduces the rate at which these coins are released, making the asset more scarce.
- **Limited Supply**: There can only ever be 21 million BTC in the world, with over 19 million already mined.
- **Global Mining Dynamics**: Corporate and independent Bitcoin miners are globally distributed, seeking cheap electricity prices in countries like Kazakhstan and Iran.
    - China, previously a dominant force in Bitcoin mining, witnessed a shift due to government crackdowns, leading to a migration of miners to other countries.

METASTASIS

Syllabus GS Paper 3 – Sci and Tech)



Study reveals chemo, radiotherapy hazards

'FOOD SUPPLEMENTS COULD REDUCE RISK'

METASTASIS

The most common cause of cancer-related mortality is metastasis

- Metastasis is the spread of cancer cells from the place where they first formed to another part of the body
- It is supposed to have a complex mechanism, but there is no one conclusive theory

Popular theory | Metastasis occurs because cancer cells break away from the original (primary) tumor, travel through the blood or lymph system, and form a new tumor in other organs or tissues

Tata Memorial Centre's new theory | Dying cancer cells (after treatment in form of chemotherapy, radiation or surgery) release cell-free chromatic particles, called cfChPs or fragments of chromosomes

- Some of these cfChPs bind with healthy cells and cause new tumours

10 YEARS OF RESEARCH

Finding cfChPs

- TMC doctors grafted human breast cancer cells in mice to generate tumours
- The mice then received chemotherapy, radiotherapy or surgery
- Researchers found human DNA (cfChPs) and cancer proteins in mice brains
- Some mice were given compounds to de-activate or de-stroy cfChPs
- These mice had minimal human cfChPs or cancer proteins in their brains
- This proved cfChPs may contain cancer-causing genes, and some migrate through blood to enter healthy cells in other organs, causing metastasis

Deactivating CfChPs

- TMC doctors worked out a pro-oxidant compound to neutralise cfChPs
- They used a compound (R-Cu) called resveratrol from the skin of grapes/berries along with copper
- This combination developed as a nutraceutical was used in some patients of blood, stomach, oral and brain cancers
- R-CU generates fee oxygen radicals that can bind with chromatin
- R-Cu also prevents chemotherapy toxicity
- R-Cu minimises aggressive behaviour of cancer
- Including nutraceutical (biological) agents such as R-cu can improve cure rates

cfChPs

DNA

A nutraceutical is a food or food product that provides health benefits in addition to its basic nutrition, often due to its added bioactive compounds or medicinal properties

Continued from P 1

Although many patients are cured of cancer, our study uncovered a potential risk involved in current cancer treatment practices," said Dr Indraneel Mittra, who led the research, on Monday. While chemotherapy and radiotherapy kill primary tumour cells, they cause the dying cancer cells to release chromatins — called cfChPs — which could enter healthy cells elsewhere in the body through blood and "cause cancer there", he said.

Further tests on cfChPs revealed that a nutraceutical made from copper and a plant (grapes or berries) could neutralise them and reduce the risk of metastasis, said former TMC director Dr Rajendra Badwe, who was present at the press conference. TMC has tied up with a nutraceutical manufacturer to make the medicine — which could be prescribed as supportive treatment along with chemotherapy — available in June.

Cancer metastasis has been a topic of intrigue for centuries. "How does cancer spread? There are cases where the cancerous tumour has been removed with treatment, yet the patient dies," said Dr Mittra. His team injected human breast cancer cells into mice. "We first treated the tumour that developed in the mice, biopsied the brain and found cfChPs of human cancer cells there," said Dr Mittra.

They conducted various research rounds using surgery, chemotherapy and radiation and found similar results. One arm of the study injected tumour-hit mice with the nutraceutical. "The brain biopsy of these mice revealed lower levels of CfChPs," he said.

In the last few years, the doctors started studying the effect of the nutraceutical — called R-Cu as it is a combination of grape extract resveratrol and copper — on humans. In a few patients with oral, blood, stomach and brain cancer, the doctors added R-Cu to the standard treatment with encouraging results.

"We used it in 20 blood cancer patients who developed painful ulcers in their mouths and oesophagus after bone marrow transplant," said TMC deputy director Dr Navin Khattry. Patients who received R-Cu had fewer ulcers. Similar findings among stomach cancer patients were published in an Indexed journal, Medical Oncology in November 2022, he said.

Oral cancer surgeon Dr Pankaj Chaturvedi, who tested the medicine in oral cancer patients, said, "Our findings conclude that relatively inexpensive nutraceuticals may be used as adjuncts to chemotherapy to reduce its toxicity."

The doctors said their findings have important implications for cancer treatment policies. First, clinicians need to consider cfChPs as a potential cause of metastatic cancer spread, rather than metastasis being caused by migrating cancer cells. "Secondly, cancer treatment protocols may need to include agents that deactivate or destroy cfChPs," said Dr Badwe.

Context: Recently, doctors at Tata Memorial Centre unveiled a breakthrough mechanism for cancer metastasis and pioneered a nutraceutical therapy to mitigate its risk.

Metastasis:

- **Definition**: Metastasis denotes the spread of cancer to a different part of the body from where it originated, indicating the cancer has "metastasized."
- **Development of Metastases**: It occur when cancer cells detach from the primary tumor and travel through the bloodstream or lymphatic system to form new tumors elsewhere in the body.
- **Factors**: The likelihood of cancer spreading depends on the cancer type, growth rate, and other behavioral factors identified by the doctor.
- **Sites Where Cancer Spreads**: Cancer can metastasize to nearly any part of the body, with certain cancers exhibiting preferences for specific organs or tissues.
  - Examples include breast cancer spreading to bones, liver, lungs, chest wall, and brain.
- **Variety of Targets:** Lung cancer may spread to the brain, bones, liver, and adrenal glands, while prostate cancer commonly metastasizes to bones.

Understanding Metastatic Cancer

- **Consistency of Cancer Type**: Metastatic cancer retains the same name as the primary cancer, such as metastatic breast cancer originating from breast cancer cells.
- **Diagnosis**: Metastases may be identified during initial cancer diagnosis or later during follow-up checks for signs of recurrence and metastasis.
- **Symptoms**: It depending on the affected area, ranging from pain and fractures in bone metastasis to headaches and seizures in brain metastasis.
- **Tailored Treatment**: Treatment for metastasis considers factors like the original cancer type, extent of spread, patient's health, and treatment preferences.
  - Treatment modalities may include chemotherapy, immunotherapy, targeted therapy, surgery, and radiation therapy.
- **Management of Metastatic Cancer:**
  - While some cases of metastatic cancer can be cured, for most, treatment aims to slow disease progression and alleviate symptoms.
  - The effectiveness of treatment varies based on cancer type, extent of spread, and response to therapy.

ALL INDIA RADIO

Feb 26

SWACHH BHARAT MISSION

(Syllabus: GS Paper 2 – Govt Policies/Schemes)

India's first septic tank cleaning robot strengthening Swatch Bharat campaign

Context: India's first septic tank cleaning robot, offering an end-to-end solution to eliminate manual scavenging, is strengthening the Swachhata Abhiyan in different corners of the country.

Swachh Bharat Mission

- **About**: BM commenced in 2014 as a nationwide initiative by the Government of India, succeeding the Nirmal Bharat Abhiyan of 2009.
- **Objective**: Its primary goal is to eradicate open defecation and enhance solid waste management practices across the country.
- **Phases of Implementation:** Phase 1 of SBM operated until October 2019, with a focus on constructing toilets and achieving an "open-defecation free" (ODF) India by Gandhi Jayanti, 2019.
- **Objectives:** Instigating awareness and behavioral shifts regarding sanitation practices.
  - Strengthening local-level capacities for effective implementation.
- **Phase 2**: Spanning 2020–21 to 2024–25, concentrates on sustaining ODF status and improving waste management.
- **Focus of Phase 2**: Sustaining ODF status, Enhancing solid and liquid waste management, and Improving the welfare of sanitation workers.
- **Government Subsidies and Financing:** The Government provides financial subsidies for toilet construction, waste management infrastructure, and behavior change campaigns.
  - Both the central and state governments contribute to financing the SBM.
- **Mission Structure**:
  - Rural sanitation (SBM-Gramin) falls under the Ministry of Jal Shakti.
  - Urban sanitation (SBM-Urban) is overseen by the Ministry of Housing and Urban Affairs.

India's first Septic Tank

- **About**: India has introduced its first septic tank/manhole cleaning robot, which promises to revolutionize sanitation practices in the country.
- **Innovative Solution**: The robot offers an innovative end-to-end solution to eliminate manual scavenging.
- **Importance of Swachh Bharat Campaign**: This initiative aligns with the Swachh Bharat Campaign, aiming to enhance sanitation and hygiene across India.
- **Mechanism**: The robot utilizes advanced technology to clean septic tanks and manholes efficiently and safely.

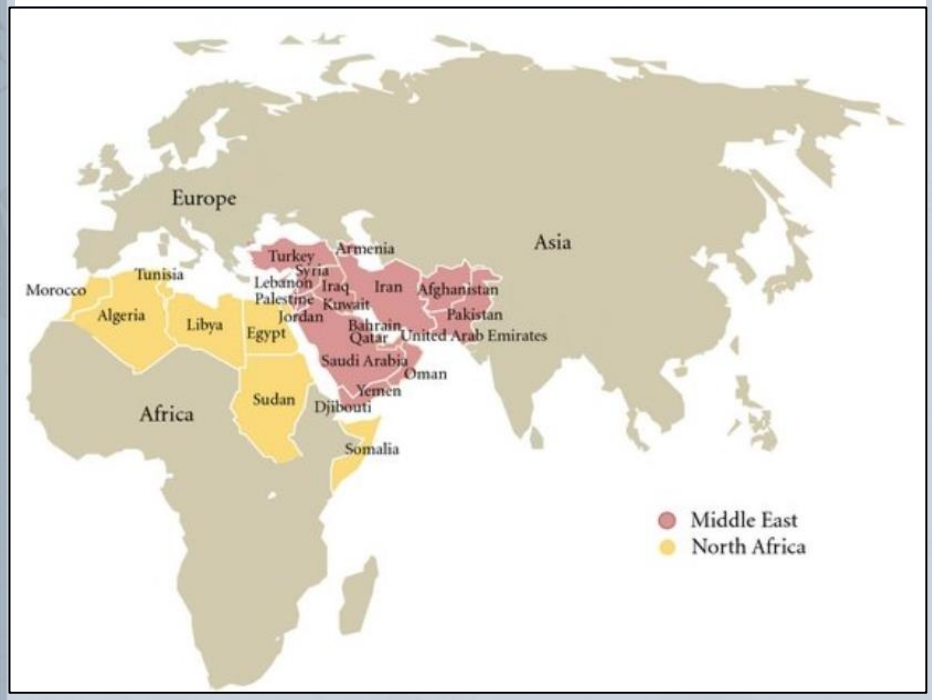
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Feb 26

MENA REGION

(Syllabus: GS Paper 3 – Env & Eco)

Climate impact: Water storage projected to decrease across wetter lands around Caspian, Mediterranean seas



Context: Researchers from the European Geosciences Union recently conducted a study projecting future water storage changes across the **Mediterranean, Middle East, and North Africa** in response to global warming and a climate intervention method aimed at mimicking planet cooling effects.

Highlight of the Report

- **Water Stress in MENA Region**: MENA is currently among the most water-stressed regions worldwide, with 12 out of the 17 most water-stressed countries situated here.
- **Impact on Terrestrial Water Storage (TWS)**: TWS encompasses all water on land surfaces and subsurfaces and is projected to decrease in wetter areas around the Caspian and Mediterranean seas but increase across most of the MENA region.
- **Mediterranean Vulnerability**: Despite better water storage, the Mediterranean region is expected to suffer reduced water availability due to decreased rainfall and increased irrigation demand under future climate scenarios.
- **Stratospheric Aerosol Intervention (SAI)**: The study examined the impact of SAI on mitigating global warming effects in the region, which aims to mimic the cooling effects of volcanic eruptions by injecting sulphur dioxide into the stratosphere.
- **Regional Trends**: Global warming generally decreases TWS extremes, with some exceptions. SAI implementation partly mitigates reductions in extreme TWS in certain regions like Iran and Iraq.

Middle East and North Africa (MENA)

- **About:** MENA stands for the Middle East and North Africa region, encompassing approximately 19 to 27 countries.
- **Population Dynamics**: The World Bank identifies 21 countries in MENA, representing about 6% of the world's population, according to 2020 data.
- **Resource Reserves**: OPEC data reveals that the MENA region holds over 50% of the world's oil reserves and 40% of its natural gas reserves.
- **Global Economic Significance**: MENA's significant production of petroleum and natural gas positions it as a crucial contributor to the global economy and energy supply.
- **Countries**: Algeria, Bahrain, Djibouti, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Malta, Morocco, Oman, Qatar, Saudi Arabia, Syria, Tunisia, United Arab Emirates, Palestine, and Yemen.

RTE ACT

(Syllabus: GS Paper 2 – Governance)

WHY MAHARASHTRA IS EXEMPTING SOME PVT SCHOOLS FROM RTE QUOTA

AJOY SINHA KARPURAM
NEW DELHI, FEBRUARY 26

MAHARASHTRA RECENTLY became the latest state to dilute private schools' obligations under The Right Of Children To Free And Compulsory Education Act, 2009 (RTE Act). The state has passed rules that make it possible for some schools to not reserve 25 per cent of seats for "weaker section and disadvantaged group in the neighbourhood".

The rule

The amendment brought in by the Maharashtra Legislative Assembly states that the "local authority shall not identify the private unaided school, for the purposes of 25 per cent admission of disadvantaged groups and weaker sections ... where government schools and aided schools are situated within one-kilometre radius of that school."

Instead, students in these neighbourhoods will be considered for admission into said government or aided schools first. This exemption will also apply to private schools established in the future, as long as they are within a 1 km radius of a government or aided school.

With this rule, Maharashtra joins Karnataka and Kerala as states that have provided private schools with exemptions from providing RTE admissions.

Karnataka introduced the rule in December 2018, and specifically referenced the Kerala rules introduced in 2011. In Kerala, the fee concession for students is only made available to RTE quota students if there are no government or aided schools "within walking distance", which is 1 km for students joining in Class 1.

Rationale behind the rule

There are two reasons for certain states to make this move. First is the drop in enrollment in government schools. While introducing the amendment in 2018, Karnataka law minister Krishna Byregowda had said: "Till date, Karnataka had allowed parents to admit children in private schools despite having government schools in the same neighbourhood. This has resulted in the enrollment ratio [in government schools] dropping drastically."

Private schools have also highlighted that states have often failed to reimburse the fee for students admitted through the RTE quota. According to Section 12(2) of the RTE Act, state governments are bound to reimburse expenses incurred by the school per-child, or the fee amount, whichever is less. In Maharashtra, the Maharashtra English School Trustees Association threatened to boycott RTE admissions last December citing pending payments of Rs 1800 crore in reimbursements. This figure has now risen to Rs 2000 crore.

Diverging responses

Private unaided schools have welcomed the new rules. "This is a good decision and we welcome it. The number of RTE admissions in private schools will considerably reduce... the number of students in government schools will also increase," Rajendra Chorge, the vice president of the Independent English Schools' Association in Maharashtra, previously told *The Indian Express*.

Others, however, have been critical. "Section 12(1)(C) of the RTE Act that mandates 25 per cent reservation of seats to children from disadvantaged backgrounds is in the direction of contesting the education apartheid in the country, and bringing parity and equality of opportunity for all children. Maharashtra government's amendment is unjustified" Shantha Sinha, a member of the subcommittee of the Central Advisory Board of Education, which played a crucial role in drafting the RTE Act, said.

Context: Maharashtra Recently became the latest state to dilute private schools' obligations under The **Right Of Children To Free And Compulsory Education Act, 2009 (RTE Act).**

The Rule

- **About:** The Maharashtra Legislative Assembly has introduced an amendment stating that private unaided schools within a 1km radius of government or aided schools will not be obligated to allocate 25 percent of their admissions to disadvantaged groups and weaker sections.
- **Priority Admission to Government or Aided Schools**: Instead, students residing in these neighborhoods will be given priority for admission to nearby government or aided schools, effectively bypassing the quota system in private schools.
- **Extension to Future Private Schools**: This exemption will also extend to private schools established in the future, as long as they fall within a one-kilometer radius of a government or aided school, aligning with the intent to prioritize government or aided school admissions for local students.
- **Maharashtra's Alignment with Karnataka and Kerala**: With this amendment, Maharashtra joins Karnataka and Kerala in granting exemptions to private schools from the RTE (Right to Education) admissions provision, reflecting a trend among certain states in India.
- **Reference to Karnataka and Kerala Rules**: Karnataka first implemented a similar rule in December 2018, referencing the Kerala rules established in 2011, which allow fee concessions for RTE quota students only if there are no government or aided schools within a one-kilometer radius for students entering Class 1.

Rationale Behind the Rule

- **Drop in Enrolment in Government Schools:** Karnataka's law minister highlighted the decline in government school enrolment due to parents preferring private schools even when government schools are available nearby.
- **Failure to Reimburse RTE Quota Fees**: States have reportedly failed to reimburse private schools for students admitted through the RTE quota, as mandated by Section 12(2) of the RTE Act.
- **Divergent Responses to the Moves**: Private unaided schools, like the Independent English Schools' Association in Maharashtra, support the new rules, anticipating a reduction in RTE admissions and an increase in government school enrollments.

THE HINDU Page 14

GARBHINI-GA2

(Syllabus: GS Paper 3 – Sci and Tech)

India-specific AI model to find gestational age developed

The Hindu Bureau
CHENNAI

The Garbhini-GA2 accurately estimates the foetus' age, reducing error by almost three times

Researchers have developed an India-specific artificial intelligence model to precisely determine the gestational age of a foetus in the second and third trimester of pregnancy.

The model has been designed by researchers at the Indian Institute of Technology-Madras and the Translational Health Science and Technology Institute, Faridabad. It is part of an interdisciplinary group for advanced research on birth outcomes – DBT India initiative (GARBH-Ini) programme.

The Garbhini-GA2 is the first late-trimester GA estimation model to be developed and validated using Indian population data. Currently models used for Western population are in use which could prove erroneous when applied in the later part of pregnancy due to variations in the growth of the foetus in the Indian population, the researchers say.

The Garbhini-GA2 accurately estimates the foetus' age, reducing error by almost three times.

The Indian data would help to provide appropriate care for pregnant women and determine the precise date of birth, thus reducing maternal and infant mortality rates.

Rajesh Gokhale, Secretary, Department of Biotechnology, said GARBH-Ini, the department's flagship programme, was being validated across the country.

Several investigators, including Himanshu Sinha, associate professor, Bhupat and Jyoti Mehta School of Biosciences, Department of Biotechnology, IIT-Madras, and Shinjini Bhatnagar, principal investigator of the programme and a distinguished professor at THSTI, were involved in the project.

The findings were published in the peer-reviewed *Lancet Regional Health Southeast Asia*.

Mr. Sinha said advanced data science and AI/ML techniques were used to build tools to predict unfavourable birth outcomes and the first step is to develop accurate GA models that perform significantly better than currently used models designed using western populations.

End-to-end partnership

Ms. Bhatnagar said the application of sophisticated data science tools was not sufficient. Ensuring that technological advancements yield tangible benefits in the clinical realm lies in the end-to-end partnership between clinicians and data scientists. "Such collaboration ensures that the development of solutions is not only technically sound but also clinically relevant and seamlessly integrated into healthcare workflows," she said.

Context: Researchers have developed an India-specific artificial intelligence model (Garbhini-GA2) to precisely determine the gestational age of a foetus in the second and third trimester of pregnancy.

Garbhini-GA2

- **About**: It is a vital component of an interdisciplinary initiative known as the DBT India initiative (GARBH-Ini) programme, focused on advanced research concerning birth outcomes.
- **Collaborative Development:** The model was crafted collaboratively by researchers at the Indian Institute of Technology Madras and the Translational Health Science and Technology Institute, Faridabad.
- **Addressing Population Specifics:** Garbhini-GA2 is the inaugural late-trimester GA estimation model tailored and validated using data from the Indian population, aiming to rectify potential inaccuracies stemming from the use of Western population models during the later stages of pregnancy.
- **Enhanced Accuracy**: The Garbhini-GA2 model significantly enhances accuracy, reducing estimation error by nearly threefold in determining the foetus' age.
- **Improved Maternal and Infant Care:** The utilization of Indian population data facilitates the provision of appropriate care for pregnant women and aids in determining precise delivery dates, consequently mitigating maternal and infant mortality rates.
- **Flagship Programme Validation**: Rajesh Gokhale, Secretary of the Department of Biotechnology, emphasizes the nationwide validation process of GARB-Ini, the department's flagship programme, underscoring its importance.
- **Contributors and Investigators**: The project involved contributions from various investigators, including Himanshu Sinha, an associate professor at the Bhupat and Jyoti Mehta School of Biosciences, Department of Biotechnology, IIT Madras, and Shinjini Bhatnagar, the principal investigator of the programme and a distinguished professor at THSTI.

PIB Feb 26

PARLIAMENTARY CONSULTATIVE COMMITTEE

(Syllabus: GS Paper 2 – Polity)

Union Home Minister and Minister of Cooperation, Shri Amit Shah Chairs a meeting of Parliamentary Consultative Committee of the Ministry of Home Affairs at Daman

Context: Recently, the Union Home Minister and Minister of Cooperation presided over a meeting of the Parliamentary Consultative Committee of the Ministry of Home Affairs at Daman.

Parliamentary Consultative Committee

- **About:** These committees are constituted by the Ministry of Parliamentary Affairs.
  - They are typically formed after the new Lok Sabha is constituted.
  - Upon the dissolution of each Lok Sabha, these committees stand dissolved and are reconstituted with the new Lok Sabha.
- **Composition:** Guidelines on composition, functions, and procedures are formulated by the Ministry of Parliamentary Affairs.
- The Ministry organizes meetings during both parliamentary sessions and intersession periods.
- **Members are drawn from:** Both Houses of Parliament.
- **Membership:** It is voluntary, at the discretion of members and party leaders.
- **Committee size**: From a minimum of 10 to a maximum of 30 members.
- **Functions**
  - These committees are affiliated with various ministries/departments of the Central Government.
  - The Minister/Minister of State of the relevant ministry chairs the consultative committee.
  - They provide a platform for informal discussions between ministers and Parliament members on government policies and programs.
  - Consultative Committees are distinct from Parliamentary Committees, which have specific characteristics and functions:
    - Appointed or elected by the House, nominated by the Speaker/Chairman, Operates under the direction of the Speaker/Chairman, Presents reports to the House or the Speaker/Chairman, Secretariat provided by the Lok Sabha/Rajya Sabha.

LIVEMINT Feb 26

G-33 COUNTRIES
(Syllabus: GS Paper 2 – IR)



Context: Ahead of the 13th ministerial conference of the World Trade Organization (WTO), a majority of the G-33 countries have called for a permanent solution to public stockholding for food security.

G-33 Countries

- **About:** The G33, also known as the Friends of Special Products in agriculture, constitutes a coalition primarily comprising developing and least developed countries.
- **Membership**: Despite its name, the G33 boasts 47 member nations, showcasing a diverse representation. Key countries include India, China, Indonesia, Pakistan, Nigeria, Philippines, Turkey, Tanzania, Kenya, and South Korea.
- **Establishment and Purpose**: Formed before the 2003 Cancun ministerial conference, the G33 emerged to coordinate efforts during the Doha Round of World Trade Organization (WTO) negotiations, with a primary focus on agricultural matters.
- **Defensive Posture and Dominance**: India's dominance within the group underscores its "defensive" stance concerning agriculture in WTO negotiations. The G33 aims to curtail the level of market opening demanded of developing nations.
- **Advocacy for Special Measures**: The G33 advocates for the implementation of a "special products" exemption, enabling developing countries to exclude specific products from tariff reductions. Moreover, it pushes for a "special safeguard mechanism," allowing tariff hikes in response to sudden import surges.

ECONOMIC TIMES

Feb 26

SHAHPUR KANDI BARRAGE

(Syllabus: GS Paper 1 – Geography)

India completely stops Ravi river water flow to Pakistan. Historical context and significance





Context: The completion of the Shahpur Kandi barrage has effectively ceased the flow of water from the Ravi river into Pakistan, according to a report.

Shahpur Kandi Barrage

- **Foundation**: The Shahpur Kandi Barrage Project was initiated with the laying of its foundation stone by former Prime Minister PV Narasimha Rao in 1995.
- **Location**: Situated on the Ravi River, the Shahpur Kandi barrage straddles the border of Punjab and Jammu and Kashmir.
- **Purpose**: By redirecting water previously flowing towards Pakistan, the Shahpur Kandi barrage enables India to utilize it for the benefit of Jammu and Kashmir and Punjab, effectively optimizing water resources.
- **Utilization of Water**: The newly-built barrage enhances India's capacity to fully exploit the water resources allocated to it, ensuring efficient utilization within the region.

Indus Water Treaty (IWT)

- **Signed in:** 1960.
- **Purpose:** A **water-distribution treaty** between **India and Pakistan**, arranged and negotiated by the **World Bank.**
- **Signatories:** Prime Minister Jawaharlal Nehru, President of Pakistan, Ayub Khan, former Vice President of the World Bank
- **Major Provisions of the treaty**:
  - **The three western rivers to Pakistan**: Indus, Chenab and Jhelum to Pakistan for unrestricted use, barring certain non-consumptive, agricultural and domestic uses by India.
  - **The three Eastern rivers**: Ravi, Beas and Sutlej were allocated to India for unrestricted usage.
  - This means that 80% of the share of water went to Pakistan, while leaving the rest 20% of water for use by India.

DTE Feb 26

OLIVE RIDLEY TURTLE
(Syllabus: GS Paper 3 – Env and Eco)

Why are Olive Ridley sea turtles dying in large numbers on Odisha's coast?

Context: Recently, the failure to comply with a two-decade-old order issued by the Central Empowered Committee (CEC) is likely the primary cause of the deaths of a large number of Olive Ridley sea turtles along the Odisha coast each year.

Olive Ridley Turtle

- **About:** The species is the second-smallest and most abundant of all sea turtles found in the world.
- **Habitat Distribution**: Temperate waters of the Pacific, Atlantic, and Indian oceans.
    - The Gahirmatha Marine Sanctuary in Odisha is renowned as the largest rookery, serving as a breeding colony for sea turtles worldwide.
- **Sea Turtles in India**: Leatherback, Loggerhead, Hawksbill, Green and Olive Ridley.
- **Gahirmatha Marine Sanctuary:** It is recognized as the largest breeding colony (rookery) of sea turtles globally.
- **Threats**: Habitat Destruction, Effects of Pollution, Change in Climate Condition, Fishing and Poaching.
- **Conservation Status**
    - **IUCN Red List**: Vulnerable
    - **Wildlife Protection Act, 1972**: Schedule 1
    - **CITES:** Appendix I

Central Empowered Committee (CEC)

- **About:** The CEC was established by an Order dated 9th May 2002, issued by the Supreme Court of India in the case of T.N. Godavarman Thirumalpad Vs Union of India and Ors.
- **Monitoring Mandate**: Its primary function is the monitoring of the implementation of the orders issued by the Hon'ble Court, which includes overseeing cases of non-compliance.
- **Scope**: The CEC's monitoring extends to various aspects such as encroachment removals, adherence to working plans, compensatory afforestation, plantations, and other conservation matters.

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